

Administrator's Mission to Greater China
11 December, 2013
Shanghai, China

Sustainable Building Tour of Shanghai Tower

Purpose: Tour Shanghai's most sustainable skyscraper, designed by U.S. architecture and engineering firms. Learn about its features, and the experience, value, and impact of U.S. firms bringing advanced sustainable design techniques to China.

Key Message: Innovative building and infrastructure design, construction, and operation are essential to achieving sustainable urban growth and quality of life.

Key Ask: Request building performance lessons after it goes into operation and maintenance.

Overview and Key Issues: Architecture firm Gensler, based in San Francisco, designed Shanghai Tower and will be hosting your tour which will include a technical briefing and a visit to the 100th floor. On the way down, you will visit an indoor garden, one of several that are part of the indoor air quality plan for the building. The event is a chance to highlight the role and market for U.S. services firms in advancing environmental sustainability, quality of life, and economic growth in urban development.

NOTE: Please wear closed toe shoes for this tour. This engagement will be featured in social media to highlight the need for sustainable design, construction, technology, and innovation in meeting the quality of life and environmental sustainability of urban growth.

Participants:

Gensler

- Shaomei Lee, Managing Director, Gensler
- Tim Etherington, Managing Director, Gensler
- Michael Peng, Senior Associate, Gensler

EPA/USG Attendees

- Gina McCarthy, EPA Administrator
- Subset of EPA delegation and Embassy (TBD)

Agenda Summary:

- 11:30 Depart CGR for Shanghai Tower
- 12:00 Arrive Shanghai Tower, start tour
 - Met by Shaomei Lee and Tim Etherington
 - Briefing on the project, green technologies, doing business in China
- 12:20 Small group takes tour up to 100th floor
- 1:00 Tour ends, depart for lunch

Background:

Shanghai Tower is under construction. When completed, it will be one of the tallest buildings in Asia, as well as one of the greenest. Sustainability is at the core of Shanghai Tower's design. The facade's taper, texture, and asymmetry work in partnership to reduce wind loads on the building by 24 percent, offering a \$58 million USD savings in overall building materials. The building's transparent inner and outer skins admit maximum natural daylight, thereby reducing the need for artificial light. The tower's outer skin also insulates the building, reducing energy use for heating and cooling. The tower's spiraling parapet collects rainwater, which is used for the tower's heating and air conditioning systems. Wind turbines located directly beneath the parapet generate on-site power for the upper floors of the building, with a 2,130kW natural gas-fired combined heat and power system on site providing electricity and heat energy to the lower floors. Fully one third of the site will be green space with landscaping that cools the site. Overall, Shanghai Tower's sustainable strategies are estimated to reduce the building's carbon footprint by 34,000 metric tons per year; and the tower is targeting LEED Gold certification from the U.S. Green Building Council and the China Green Building Three Star rating.

Gensler will likely also discuss the software modeling that assisted with the design and construction of the building, leading to the \$50 million-plus construction cost reduction. The modeling helped them to custom-order glass and structural concrete, saving waste, as well as reducing the aggregate amount of construction material used throughout the building. According to Gensler, this was one of the more innovative design techniques used.

With increasing environmental awareness, energy demands, and targets to reduce overall energy use in China, green building has been somewhat on the rise in China. Buildings seek LEED certification and there is also a Chinese green building certification, the Green Building Design Label or "Three Star." Multinational companies were the early adopters and most likely to pursue construction of green buildings with large companies and an increasing number of large hotels also adopting to build green. However, a lack of understanding and misaligned incentives have been said to slow the adoption of green building in China with more attention paid to short-term costs as construction continues to boom. There is a lack of consumer demand for green buildings, when constructed there is sometimes a lack attention of technical capacity to maintain green operations, and there is a limited green supply chain.

Administrator's Talking Points

NOTE: You are not expected to give a formal presentation. These are notes about some of EPA's Green Building work if you would like to mention during conversation while on site.

[All redactions below are based on Exemption 5]

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